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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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AMIN & TUROCY, LLP
24TH FLOOR, NATIONAL CITY CENTER
1900 EAST NINTH STREET
CLEVELAND, OH 44114

EXAMINER

GODDARD, BRIAN D

ART UNIT	PAPER NUMBER
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2171

DATE MAILED: 02/04/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,827

Applicant(s)

DUMAIS ET AL.

Examiner

Brian Goddard

Art Unit

2171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 and 41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 and 41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Amendment A, filed 24 November 2003.
2. Claims 1-39 and 41 are pending in this application. Claims 1, 27, 39 and 41 are independent claims. In Amendment A, claim 40 was cancelled, and no claims were amended. This action is made Final.

Claim Rejections - 35 USC § 101

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 27-38 and 41 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Referring to claims 27-38, the claim limitations do not constitute a process, machine, manufacture, or composition of matter. Instead, these claims are directed to a "method for providing information retrieval" in an algorithmic format. This algorithm is an abstract idea, or a mere arrangement of data independent of physical data or matter, which cannot be classified into any of the statutory categories set forth above.

Claim 41 does not constitute a process, machine, manufacture, or composition of matter either. Instead, this claim is directed to "a signal" which is a natural phenomenon, and cannot be classified into any of the statutory categories set forth above.

4. To expedite a complete examination of the instant application, the claims rejected under 35 U.S.C 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 102

5. Claims 1, 22-23, 26-27, 39 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,021,403 to Horvitz et al.

Referring to claim 1, Horvitz discloses an information retrieval system as claimed. See Figures 1-4, 12-16 & 21 and the corresponding portions of Horvitz' specification for this disclosure. In particular, Horvitz teaches "an information retrieval system [See Fig. 1], comprising:

a hierarchical analysis component [inference system 76] that receives a query [See Fig. 21] and processes probabilities [See column 23, lines 59-64] associated with N categories [inference graph topics 203], each category having one or more topics [See column 23, lines 61-62], N being an integer; and

an interactive component [See Fig. 4] that provides feedback [See step 190] derived from the query and the probabilities associated with the N categories and the one or more topics, the feedback being utilized [See step 194] to determine at least one category of the N categories to facilitate retrieval of at least one of the one or more topics" as claimed.

Referring to claim 22, Horvitz discloses the information retrieval system as claimed. See Figures 17-21 and the corresponding portions of Horvitz' specification for this disclosure. In particular, Horvitz teaches the system of claim 1, as above, "wherein information is retrieved as part of a help system [200]" as claimed.

Referring to claim 23, Horvitz discloses the information retrieval system as claimed. See Figure 1 and the corresponding portion of Horvitz' specification for this disclosure. In particular, Horvitz teaches the system of claim 1, as above, "wherein information is retrieved from a network-based [See items 28 & 30] system [10]" as claimed.

Claim 26 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claims 27, 39 and 41 are also rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

6. Claims 1-4, 6-13, 15-39 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,567,805 to Johnson et al.

Referring to claim 1, Johnson discloses an information retrieval system as claimed. See Figures 1-4 and the corresponding portions of Johnson's specification for this disclosure. In particular, Johnson teaches "an information retrieval system, comprising:

a hierarchical analysis component [Search System 123] that receives a query [See step 201] and processes probabilities [confidence levels or scores] associated with

N categories [See e.g. Fig. 3], each category having one or more topics [sub-categories], N being an integer; and

an interactive component [Dialog Manager 121] that provides feedback [interactive dialog] derived from the query and the probabilities associated with the N categories and the one or more topics [See Fig. 2 (Step 204) and Summary of the Invention, etc.], the feedback being utilized to determine [See Fig. 2 (Step 205)] at least one category [dialog categorization] of the N categories to facilitate retrieval of at least one of the one or more topics” as claimed.

Referring to claim 2, Johnson discloses the information retrieval system as claimed. See Figures 1 & 4 and the corresponding portions of Johnson’s specification for this disclosure. In particular, Johnson teaches the system of claim 1, as above, “further comprising an automatic classifier construction component [Text Categorizer 122] that builds a top-level classifier [rule (See Fig. 4)] for the N categories [for each category in the hierarchy] and a sublevel classifier [rule (See Fig. 4)] for each category of the one or more topics [for each sub-category in the hierarchy] associated with the N categories” as claimed.

Referring to claim 3, Johnson discloses the information retrieval system as claimed. See column 4, lines 1-5 of Johnson’s specification for the details of this disclosure. In particular, Johnson’s classifiers are provided by at least one of a decision tree, similarity-based and Bayesian-based classification model as claimed.

Referring to claim 4, Johnson discloses the information retrieval system as claimed. See column 4, lines 5-7 and column 8, lines 19-38 of Johnson’s specification

for the details of this disclosure. In particular, Johnson's automatic classifier construction component [Text Categorizer 122] employs a learning model [machine learning model (in general), symbolic rule induction (in preferred embodiment)] to build the classifiers as claimed.

Referring to claim 6, Johnson discloses the information retrieval system as claimed. See Figure 4 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson teaches the system of claim 4, as above, "further comprising a data structure [Rule File 407] that includes a mapping [See column 8, lines 30-34] of I possible queries ['features in the text' (of the queries)] and one or more associated topics [category or categories], I being an integer, to enable learning for the classifiers" as claimed.

Referring to claims 7 and 8, Johnson discloses the information retrieval system as claimed. Again, see Figure 4 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson's data structure [Rule File 407] is centrally located [See Fig. 4] and is updated via at least one of implicit and explicit user actions [See column 8, lines 24-30] as claimed.

Referring to claim 9, Johnson discloses the information retrieval system as claimed. See Figures 2-4 and the corresponding portions of Johnson's specification for this disclosure. In particular, Johnson's first classifier [Rule Applier 406] is employed to drive the sublevel classifiers at run time [See steps 204-205] to form a hierarchical classification structure [(of categories) See Fig. 3] as claimed.

Referring to claim 10, Johnson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, the query and the first classifier "are employed to determine [Step 205] the most likely of the N categories" as claimed.

Referring to claim 11, Johnson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson teaches the system of claim 10, as above, "further comprising a context disambiguation component [not numbered] that utilizes the query and the first classifier to determine the feedback [Step 204]" as claimed.

Referring to claim 12, Johnson discloses the information retrieval system as claimed. Again, see Figure 2 and the corresponding portion of Johnson's specification for this disclosure. Johnson teaches the system of claim 11, as above, "wherein the context disambiguation component utilizes the query and the feedback to drive the sublevel classifiers in order to determine a desired topic [Step 205]" as claimed.

Referring to claim 13, Johnson discloses the information retrieval system as claimed. See Figure 4 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson's disambiguation component further comprises a presentation component [User Interface Manager 401] for interfacing to a user and an analytical component [Session Manager 402] to facilitate feedback and decision-making related to the feedback [See above] as claimed.

Referring to claim 15, Johnson discloses the information retrieval system as claimed. See column 9, lines 18-35 of Johnson's specification for this disclosure. In

particular, Johnson's analytical component includes a decision analysis [dialog categorization] for determining the nature and quantity of a clarification dialog as claimed.

Referring to claim 16, Johnson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson's analytical component includes a computation [Step 205] of the value of information [confidence levels and scores] associated with feedback gained during a clarification dialog [dialog categorization] to guide the nature and quantity of the clarification dialog as claimed.

Referring to claim 17, Johnson discloses the information retrieval system as claimed. See Figures 2 & 4 and the corresponding portions of Johnson's specification for this disclosure. In particular, Johnson's analytical component employs a rule-based policy [406] that controls if and how dialog is invoked based on the distribution of probabilities [confidence levels] assigned to topics [sub-categories] at one or more layers of a classification scheme [hierarchy] as claimed.

Referring to claims 18 and 19, Johnson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson's analytical component analyzes [Steps 204-205 & 207] probabilistic weights [confidence levels and scores] associated with each category and related subtopic [confidence levels] and spread across each category and subtopic [scores] for determining feedback and presentation to the user as claimed.

Referring to claim 20, Johnson discloses the information retrieval system as claimed. See column 1, line 65 – column 2, line 7 for the details of this disclosure. In particular, Johnson's presentation component includes a ranked display of most likely N categories ['a list of relevant categories (ranked by confidence level)' (Column 2, lines 3-4)] as claimed.

Referring to claim 21, Johnson discloses the information retrieval system as claimed. See column 1, line 65 – column 2, line 7 for the details of this disclosure. Johnson teaches the system of claim 20, as above, "wherein at least one of the most likely N categories [See claim 20 above] is selected [See column 2, lines 4-7] to provide a ranked display of one or more topics as claimed.

Referring to claims 22 and 23, Johnson discloses the information retrieval system as claimed. See the Field of the Invention description in column 1, lines 6-13 for this disclosure. In particular, Johnson's information retrieval system is a network-based [online] help system as claimed.

Referring to claim 24, Johnson discloses the information retrieval system as claimed. See column 4, lines 5-7 and column 8, lines 24-25 for the details of this disclosure. In particular, Johnson's probabilities [confidence levels] are determined via a hand-crafted analysis [constructed by hand] as claimed.

Referring to claim 25, Johnson discloses the information retrieval system as claimed. See Figure 3 and the corresponding portion of Johnson's specification for this disclosure. Johnson teaches the system of claim 1, as above, further comprising L

levels [hierarchical levels] of N categories, each category having one or more topics [sub-categories], wherein L and N are integers as claimed.

Claim 26 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for this disclosure.

Claims 27-29 are rejected on the same basis as claims 1-3 respectively. See the discussions regarding claims 1-3 above for the details of this disclosure.

Claim 30 is rejected on the same basis as claim 6, in light of the basis for claim 29 above. See the discussions regarding claims 1-6 above for the details of this disclosure.

Claims 31 and 32 are rejected on the same basis as claim 8, in light of the basis for claim 30 above. See the discussions regarding claims 1-8 above for the details of this disclosure.

Claims 33-36 are rejected on the same basis as claims 9-12 respectively, in light of the basis for claim 28 above. See the discussions regarding claims 9-12 above for the details of this disclosure.

Claim 37 is rejected on the same basis as claim 15, in light of the basis for claim 27 above. See the discussion regarding claim 15 above for the details of this disclosure.

Claim 38 is rejected on the same basis as claim 17, in light of the basis for claim 35 above. See the discussion regarding claim 17 above for the details of this disclosure.

Claims 39 and 41 are rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claim Rejections - 35 USC § 103

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson.

Johnson's learning model is not explicitly associated with a Support Vector Machine employing Sequential Minimal Optimization (SMO) to train the classifiers as claimed. However, Johnson does state that any system that assigns categories to data containing text (classifier) could be used in the system and could be trained by any machine learning technique. See column 4, lines 1-7 of Johnson's specification for this disclosure. This provides direct suggestion for modifying Johnson's system to include other classifiers, such as support vector machines, trained by other machine learning techniques, such as SMO.

The examiner takes Official notice that support vector machines trained by sequential minimal optimization were classifiers of common practice in the art at the time the invention was made. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a support vector machine employing sequential minimal optimization as a classifier within Johnson's system because of Johnson's direct suggestion as provided above, and further because of the well-known benefit of SMO as a faster training system than most others.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of U.S. Patent No. 5,835,087 to Herz et al.

Johnson's analytical component does not explicitly include a cost-benefit analysis considering the cost of the dialog with the information value of the dialog as claimed.

Herz discloses a system and method similar to that of Johnson, employing a cost-benefit analysis to consider the cost of interaction with a user compared to the benefit of information gathered. See column 41, line 51 – column 45, line 17 of Herz' specification for this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Herz' cost-benefit analysis functionality to Johnson's system so as to consider the cost of the dialog with the information value of the dialog to obtain the invention as claimed. One would have been motivated to do so in order to maximize the relevance of retrieved information (benefit) while minimizing the usage of system resources (cost), as was a common desire of the art.

Response to Arguments

9. Applicant's arguments filed 24 November 2003 have been fully considered but they are not persuasive.

Referring to applicants' remarks on pages 9-10 regarding the Section 101 rejection of claims 27-38 and 41: Applicants argued that the subject claims are directed to an information retrieval system/methodology and produce useful, concrete and tangible results.

The examiner disagrees for the following reasons: Claims 27-38 are directed to “a method providing information retrieval” which has no explicit or concrete attachment to a physical system, contrary to applicants’ statements. These claims provide an algorithm or an abstract idea, which cannot be classified into any of the statutory categories set forth above. Applicants’ argument that the specification provides ample examples of practical applications has no merit because limitations from the specification are not read into the claims. The claims themselves must be explicitly directed to statutory subject matter. Further, the method of these claims does not necessarily and explicitly produce “concrete and tangible results” contrary to applicants’ assertions. The claimed method merely “facilitate(s) retrieval of...topics”, which could be performed by a human interacting with another human asking a question. Claim 41 is directed to “a signal adapted to be transmitted between at least two processes”, which again has no explicit or concrete attachment to a physical system, contrary to applicants’ statements. A signal is a natural phenomenon, and cannot be classified into any of the statutory categories.

Referring to applicants’ remarks on pages 10-11 regarding the Section 102 rejection of the independent claims: Applicants argued that Horvitz does not teach the claimed hierarchical analysis component or the interactive component.

The examiner disagrees for the following reasons: First applicants provide no concrete reasoning or basis for these arguments. Applicants simply state that Horvitz’ inference system is not the hierarchical analysis and the interactive component of applicants’ claimed invention because it does not show certain features of applicants’

invention. In response to applicants' argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a user can retrieve information without having to understand which word or phrase combinations are necessary to acquire information on a given subject; further refining the search 'without having to peruse unrelated information'; and relationships do not have to be predetermined between all topics and categories) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, applicants' arguments are speculative. For example, "unrelated information" is a completely relative term, definable only by the person desiring the information. The Office maintains that the above cited portions of the Horvitz reference teach the invention as claimed. See the grounds for rejection above for details.

Referring to applicants' remarks on pages 11-12 regarding the Section 102 rejection of the independent claims: Applicants argued that Johnson does not teach the claimed interactive component that provides feedback at various levels to facilitate the search.

The examiner disagrees for the following reasons: Again, applicants' arguments are based on the assertion that the search is refined "***without having to peruse unrelated information***". This feature is not recited in the rejected claims. Furthermore, this argument is completely speculative, being based on something relative only to the user performing the search. The Office maintains that the above cited portions of the

Art Unit: 2171

Horvitz reference teach the invention as claimed. See the grounds for rejection above for details.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goddard whose telephone number is 703-305-7821. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bdg
03 February 2004


SAFET METJAHIC
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100